Abstract of the Disclosure

A method models an object composed of one or more components. Data are input to a memory of a computer system for each component of the object. The data include Cartesian coordinates expressed in Euclidean space of a plurality of points \mathbf{x} of each component. Each component point \mathbf{x} is encoded as a vector \mathbf{x} in a general homogeneous space by $\mathbf{x} = (\mathbf{x} + \frac{1}{2}\mathbf{x}^2e + e_*)E = \mathbf{x}E - \frac{1}{2}\mathbf{x}^2e + e_*$, where e and e_* are basis null vectors of a Minkowski space E. General homogeneous operators are associated with each data point to generate a model of the object. The general homogeneous operators are applied to each encoded point of the associated component for each component to manipulate the model of the object.